Appl. No. 09/720,623
AMENDMENT
Docket No. MAEJ-136

Listing of Claims:

This listing of claims will replace all prior listings of claims. Please add new Claims 22-27.

1-2. (Canceled)

3. (Previously Presented) A process for producing hydrocarbon-phenol resin as claimed in Claim 12, wherein the ratio of ortho/para is 2.0 or more with regard to the substitution position of the unsaturated cyclic hydrocarbon relative to a hydroxyl group of the phenolic compound in said hydrocarbon-phenol resin.

4-5. (Canceled)

6. (Previously Presented) A process for producing epoxy resin, which comprises the steps of reacting the hydrocarbon-phenol resin obtained by the process as claimed in Claim 12, with epihalohydrin in the presence of a base catalyst, then removing residual catalyst, and removing unreacted epihalohydrin.

7. (Canceled)

8. (Previously Presented) A process for producing hydrocarbon-phenol resin as claimed in Claim 12, wherein after said reaction, catalyst is deactivated and then unreacted phenolic compound is recovered.

9. (Previously Presented) A process for producing hydrocarbon-phenol resin as claimed in Claim 12, wherein said phenolic compound is phenol.

10-11. (Canceled)

12. (Previously Presented) A process for producing a hydrocarbon-phenol resin, comprising:

(1) reacting a phenolic compound and dicyclopentadiene in the presence of an acid catalyst at a temperature in the range of 50°C to 90°C or, if the melting point of the phenolic compound is higher than 50°C, in the range from the melting point of the phenolic compound to 90°C,

wherein the concentration of the acid catalyst is from 0.001 to 10% by mass relative to the total mass of phenolic compound, dicyclopentadiene, and acid catalyst, the concentration of moisture is maintained at 200 ppm or less, and the dicyclopentadiene is added to the phenolic compound intermittently or continuously so that the molar fraction of the amount of ether product relative to that of the mixture of products is 0.1 or more; and

(2) after addition of the dicyclopentadiene, increasing the temperature to 110°C or higher so as to continue the reaction further and substantially extinguish the ether product.

13. (Previously Presented) A process for producing a hydrocarbon-phenol resin as claimed in Claim 12, wherein the concentration of the acid catalyst is from 0.05 to 1% by mass relative to the total mass of phenolic compound, dicyclopentadiene, and acid catalyst.

14. (Previously Presented) A process for producing a hydrocarbon-phenol resin as claimed in Claim 12, wherein the moisture content is maintained at 100 ppm or less.

15. (Previously Presented) A process for producing a hydrocarbon-phenol resin as claimed in Claim 12, wherein the reacting is carried out in a reaction vessel containing an inert gas.

16. (Previously Presented) A process for producing a hydrocarbon-phenol resin as claimed in Claim 12, further comprising supplying the phenol compound and an organic solvent to a reaction vessel and heating the vessel to remove the organic solvent and moisture as an azeotropic mixture prior to adding the dicyclopentadiene.

17. (Previously Presented) A process for producing a hydrocarbon-phenol resin as claimed in Claim 12, wherein the molar fraction of ether product relative to that of the mixture of products is 0.1 to 0.5.

18. (Previously Presented) A process for producing a hydrocarbon-phenol resin as claimed in Claim 12, wherein said increasing the temperature reduces the molar fraction of ether product to 0.05 or less.

19. (Previously Presented) A process for producing a hydrocarbon-phenol resin as claimed in Claim 12, wherein the content of the ether product is measured after addition of the dicyclopentadiene to the phenolic compound.

20. (Previously Presented) A process for producing a hydrocarbon-phenol resin, comprising:

reacting a phenolic compound and an unsaturated cyclic hydrocarbon having two or more carbon-carbon double bonds in the presence of an acid catalyst so that the molar

fraction of the amount of ether product relative to that of the mixture of products is 0.1 or more; and

increasing the temperature of reaction of the phenolic compound and the unsaturated cyclic hydrocarbon by at least 20°C to reduce said molar fraction to 0.05 or less.

21. (Previously Presented) A process as claimed in claim 20, wherein the content of the ether product is measured after addition of said unsaturated cyclic hydrocarbon to said phenolic compound.

22. (NEW) A process as claimed in claim 12, comprising using the molar fraction of the amount of ether product relative to that of the mixture of products as an index to adjust reaction temperature, retention time of reaction, catalyst concentration, or moisture content, depending upon the phenolic compound and dicyclopentadiene starting materials.

23. (NEW) A process for producing a hydrocarbon-phenol resin as claimed in Claim 12, wherein said increasing the temperature reduces the molar fraction of ether product to 0.02 or less.

24. (NEW) A process as claimed in claim 12, wherein the molar ratio of phenolic compound to catalyst is 562 to 790:1.

25. (NEW) A process as claimed in claim 20, comprising using the molar fraction of the amount of ether product relative to that of the mixture of products as an index to adjust reaction temperature, retention time of reaction, catalyst concentration, or

24. (NEW) A process as claimed in claim 12, wherein the molar ratio of phenolic compound to catalyst is 562 to 790:1.

25. (NEW) A process as claimed in claim 20, comprising using the molar fraction of the amount of ether product relative to that of the mixture of products as an index to adjust reaction temperature, retention time of reaction, catalyst concentration, or moisture content, depending upon the phenolic compound and dicyclopentadiene starting materials.

26. (NEW) A process for producing a hydrocarbon-phenol resin as claimed in Claim 20, wherein said increasing the temperature reduces the molar fraction of ether product to 0.02 or less.

27. (NEW) A process as claimed in claim 20, wherein the molar ratio of phenolic compound to catalyst is 562 to 790:1.